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DISEASES OF THE CHEST

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Editorial Comment

"DUMMY DIRECTORS" Dummy directors are a disease which sometimes afflicts organizations.

It is caused by the simbrosis of a doctor suffering from an indiscriminating desire for free advertising, and the desire of a layman who covets power over affairs medical to which he, a layman, is not entitled by the Constitution and By-Laws under which such a lay employee works.

The layman says to the doctor, "We want you on our Board of Directors." "No," says the doctor, "I have no time to devote to work in which I am not primarily interested." Of course, that is why the layman chose him. "Don't let that worry you, doctor, we will do all the work, and you will get the credit."

So the doctor snatches a little cheap publicity to which he is not entitled, and lives a lie, in that he actually directs nothing.

Rest assured, Doctor Dummy Director, you maintain your position only because you are considered too stupid or disinterested to know what is going on in the organization.

Resign, regain your self-respect, and the respect of the members of your profession who know what it is all about. Make room for the specialist whose life work is to direct such enterprise.

When a chest specialist is invited to be a director of an X-ray Organization, of a Cancer Research Institute, of a Heart Association, or of some other beneficial set-up entirely apart from his specialty, which his superiors in those avenues of activity passed by, I hope his common sense gives him wits enough to recognize the insult to him and his profession.

Be too proud of your profession to be a Dummy Director!

Direct or *Resign!* F. W. B.

EXAMINE THE SPUTUM Every doctor who would make any kind of an examination of a patient for pulmonary tuberculosis, should also examine the sputum. It is most simple, and by doing it yourself, the trouble and unnecessary waiting incident to forwarding a specimen to the state laboratory is obviated. Repeated examinations are indicated in many cases. It is a safe rule that the sputum should not be considered negative for tubercle bacilli unless several specimens have been rather meticulously searched. Any doctor who has the equipment to make an examination of the urine or to examine a blood smear has the essentials for examining the sputum for tubercle bacilli. A microscope, glass slides, a flame and a bottle or two of simple stains complete the required outfit. There is no need here to go into the details of this laboratory examination. These

can be obtained from almost any textbook or laboratory manual. In practically every community there are open, far advanced cases of pulmonary tuberculosis. Would this were not so, but unfortunately it happens to be. Happily, however, for our purpose at hand, it may serve in a helpful and practical way. The practitioner can perfect himself in the staining technic of tubercle bacilli from this known positive source. Once this has been attained, the feeling of assurance, yes, independence, is most comforting. You have acquired the possession of a most potent means of investigation; and one that reaches into the shadows of one of mankind's greatest scourges.

One or two more bottles of chemical reagents, a centrifuge, and the set-up for performing the concentration method is at hand. This is a more accurate and refined method for finding the tubercle bacillus in the sputum and should be employed when the examination is negative by the usual direct method. Here again, any laboratory manual will give the details of this procedure. While it is very true that pulmonary tuberculosis frequently exists when no tubercle bacilli can be demonstrated in the sputum — and it is profoundly hoped that continued efforts will be directed to diagnose it more often at such time—it can be stated that the presence of tubercle bacilli in the sputum practically always means the existence of pulmonary tuberculosis. It is one of the most positive proofs in all medicine. Therefore it behooves every doctor to equip and perfect himself for the examination of the sputum for tubercle bacilli. Unlock the door to the puzzle of the open case of pulmonary tuberculosis. You have the key. C. H. H.

B. C. G. Dr. Thorvald Madsen, director of the State Serum Institute of Denmark, discussed B. C. G. in a recent lecture under the auspices of the Abraham Flexner Lectureship at the School of Medicine, Vanderbilt University. In his opinion, there appears to be no danger in its use, when the proper precautions are observed. He feels that now there has been enough accumulated evidence to show that B. C. G. increases the resistance to tuberculous infection. He notes that its use is being gradually extended and raises the question of whether it should be more widely used. He closes his lecture with this significant statement: "At present it seems to me, it might be too risky, even if it were practicable in a few places, to eradicate tuberculosis entirely, but preferably to modify the course of this infection in such a way that it becomes protective instead of destructive." C. M. H.

RED CROSS FIGHTS TUBERCULOSIS ABROAD In Peru, the Red Cross has completed plans, and is now building a pavilion of 50 beds for tuberculous children.

In San Salvador, the Red Cross has established an anti-tuberculosis dispensary which is worthy to rank with the best.

In Norway, the Red Cross has been constantly extending its health activities to include preventative work against tuberculosis.

In Australia, the most characteristic work of the Red Cross is the care of crippled children and tuberculous patients. C. M. H.

RESOLUTION: The American College of Chest Physicians, in Annual Session at San Francisco, June 12, 1938; passed a resolution expressing its opposition to any measure such as the proposed "State Humane Pound Act" which will hinder or curtail animal experimentation as conducted by fully qualified physicians.

Progress in medicine and in the sciences has been possible because of the use of living animals for experimentation. Any move to prevent the use of such animals for the benefits of science is opposed by organized medicine as a step backward in our modern civilization.

Therefore, the American College of Chest Physicians desires to go on record, and joins with other organized medical groups in opposing this proposed legislation.

Victor S. Randloph, M.D., F.A.C.S.,
Chairman, Phoenix, Arizona.

Walter E. Vest, M.D., F.A.C.P.,
Huntington, West Virginia.

Alexius M. Forster, M.D., F.A.C.P.,
Cragmor, Colorado.

By: Robert B. Homan, Jr., M.D.,
Secretary, American College of
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Dated: August 16th, 1938.

ALLERGY IN TUBERCULOSIS We have been just a little too prone to consider the allergic side of the tuberculous problem as of theoretical and academic importance only. Actually, it is of practical and vital significance. Without getting into the theoretical aspect of the question, we know that during the process of repair, that it, during the process of recovery, and actually after arrest of the disease, that the tuberculin reaction is the strongest. It is in the recovering or the recovered cases that we find clinical allergy in the form of asthma, hay fever, etc.

When these frank clinical aspects of allergy exist the entity is recognized and understood and is then only a clinical problem. There are, however, definite allergic phases to the management of the recovery stage of tuberculosis that can escape attention and recognition and that are fraught with dangers and even disastrous results.

Take the problem of so called pleural shock. I cannot say what has occurred in the other fellow's case of pleural shock, but I have studied my own cases carefully. Some of my cases of so called pleural shock unquestionably have been due to air embolism. Such cases, however, are irrelevant to this discussion. I am confident that idiosyncrasy to novocain was the cause of the shock that existed in all of my own series not attributal to air embolism. Landsteiner has proven that drug idiosyncrasy is true allergy. I have observed anaphylactic shock in surgical procedures on the tuberculous not involving the pleura, in two cases. I am now treating a nurse for seasonal hay fever who told me that during the year she took artificial pneumothorax and that she "passed out" at each refill. The doctor thought it was pleural shock, but when she called attention to the fact that she frequently had "passed out" before he started the pneumothorax refill, she was told that it was "nerves." One of my colleagues, in reporting a case of pleural shock a year ago, stated that he had not yet pierced the parietal pleura with the needle when the siezure occurred. I am, therefore, convinced that at least some cases of so called pleural shock are due to drug allergy.

Many men treating tuberculosis have had crises occur following the administration of horse serum and other protein substances introduced as coagulants in hemoptysis. Perplexing crises have occured following the administration of aspirin, quinine, and other drugs that quite definitely point to the possibility of the allergic phenomenon.

The second thing that I would call attention to is the shock that quite frequently follows transfusion in the tuberculous, seen most often when transfuion is part of the after treatment following thorocoplasty. These shocks occur in cases in which there is no question, but what the typing has been carried out accurately. I think it is far fetched to consider the shock as due to the foods that the donor may have eaten prior to the transfusion. I think we should be conscious of a much more probable allergic cause: the possible sensitivity of the patient to foreign blood serum, even though it be human and meets our arbitrary requirements from the standpoint of typing. Another is that in any form of indirect blood transfusion there is bound to be a certain amount of destruction of red blood cells. Dead red blood cells produce foreign protein reaction, and when this occurs in the highly allergic case, such as we are so very liable to find in the old tuberculous case that has come to thorocoplasty, I think it is easy to explain some of the shocks and crises that accompany blood transfusions in these cases.

I believe we cannot over emphasize the importance of possible sensitivity of an allergic sort in the chronic tuberculous.

"Medicine without ideals and without ethics ceases to be a profession," said Irvin Abell, President of the American Medical Association. This statement is very significant in view of the current threat of state medicine. Does state medicine mean a politically stimulated doctorate and a consequent abolition of ideals and ethics; or does it mean freedom from financial worries and a chance to really practice the medicine of ideals and ethics? We wish we knew the answer.

Carbon Dioxide Inhalation in Pulmonary Tuberculosis

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THE treatment of pulmonary tuberculosis is passing through a phase in which a great deal of attention is being paid to all types of mechanical and surgical measures. At the same time, certain so-called medical problems of the disease are not given adequate attention. I am referring here particularly to the management of cough and the treatment of dyspnea. An intelligent and efficient management of these conditions is impossible unless one knows their causes, severity, frequency, duration, and the patient's pulmonary and general status.

Four years ago I published a communication on the use of carbon dioxide inhalations in pulmonary tuberculosis[1]. At that time, on the basis of my clinical experience, I arrived at the following conclusions: 1. The administration of a mixture of 10 per cent carbon dioxide and 90 per cent oxygen by means of repeated inhalations was found to be a safe procedure in pulmonary tuberculosis.

2. The most consistent benefits derived from this treatment were (a) easy, effortless expectoration; (b) diminution of cough; and (c) relief from dyspnea.

3. Concomitant beneficial results were (a) sustained rest for the diseased lung during the absence of cough; (b) better and more relaxed sleep; (c) improvement in the general well-being; (d) better appetite, and in some cases relief from laryngeal pain.

4. The inhalation of carbon dioxide not only alleviates distressing cough but also enables one to reduce the consumption of narcotics and expectorants in such cases.

The clinical application of this treatment was based on the use of carbon dioxide inhalations in conditions characterized by an inadequacy or embarrassment of respiration and on data concerning functional changes in the lung and its subdivisions under the effect of these inhalations. Haldane and Priestly[2] were the first who demonstrated the importance of carbon dioxide in the control of respiration. To Henderson[3] goes the credit for being the first who suggested its therapeutic application. In 1920 Henderson and his associates[4] recommended its administration after operations. Subsequently[5] the inhalation of a mixture of carbon dioxide and oxygen was proposed for the treatment of carbon monoxide poisoning. When inhalational treatment is given in such cases, the respiratory center is stimulated, and consequently the oxygen intake and the carbon monoxide elimination are increased. An additional benefit is the prevention of post-asphyxial pneumonia, a complication that occurs in about one-third of the severely gassed cases. The beneficial influence of carbon dioxide inhalations in ether and alcohol intoxication, morphine poisoning, resuscitation after drowning and electric shock, and resuscitation of new born babies are attributable to the stimulation of the respiratory center. The inhalations were found to be of value in the prevention of postoperative massive atelectasis[6] and in counteracting hypostatic pulmonary congestion[7]. Because of the fact that the coronary arteries dilate under the effect of carbon dioxide inhalations, their use for checking attacks of angina pectoris was also suggested[8].

The direct effect of these inhalations upon the bronchi was studied by Brown[9]. His bronchoscopic examinations on patients receiving carbon dioxide - oxygen inhalations revealed that as the result of the increase in the depth of breathing, the walls of the bronchi approximate one another, and in this manner tend to free any secretion attached to the wall. Furthermore, he saw a definite blenching of the mucous membrane and violent movements of the bronchial tract. Prinzmetal and his associates[10] presented experimental evidence that the inhalation of carbon dioxide increases the negativity of the intrapleural pressure. I[1] was able to demon-

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strate empirically that following these inhalations the tenacious, viscid, mucopurulent contents of the bronchi and alveoli become liquified and less adherent to the walls of the respiratory tract.

The significance of these effects cannot be appreciated unless one keeps in mind the potential danger and the actual damage caused by the accumulation of inflammatory products in the lungs. Stagnation of these products is harmful for several reasons: 1. Lack of their elimination leads to their delivery to the blood stream and thus to varying degrees of toxemia.

2. The presence of viscid mucus or mucopurulent plugs in the bronchi or bronchioles may cause massive or lobular atelectasis. These, in turn, are followed by sudden or slowly developing symptoms, such as dyspnea, thoracic pain, rise in temperature and cyanosis. I am of the opinion that the clinical entity known as autotuberculinization that is characterized by a rise of temperature and pulse rate, by general malaise and loss of appetite, is oftentimes the result of the development of varying degrees of atelectasis. Accordingly, the treatment of this symptom complex should be focused upon the elimination of atelectasis rather than upon the use of merely symptomatic measures. It is surprising how often these two conditions, massive and patchy atelectasis are overlooked by phthisiologists. In spite of the characteristic roentgenologic appearance they remain unnoticed or taken for tuberculous involvement of the lung parenchyma or the pleura.

3. The stagnation of purulent material on the walls of the respiratory tract is prone to cause ulceration, like tuberculous ulcers develop in the intestines in tuberculous patients who swallow their sputum and have an intestinal stagnation. Ulceration of the tracheobronchial tract may cause varying degrees of hemorrhage, weakening of the bronchial wall and consequent bronchiectasis, cicatrical stenosis, and, above all, an apparently unexplainable cough that is very difficult to control.

4. The retention and collection of mucus and pus weakens the ciliary action of the mucous membranes and thereby weakens the process of natural evacuation of the respiratory tract. By obliteration of the air passages the lungs become underinflated. Thus, diminution of the ciliary function and underinflation of the lung represent a double handicap in the way of efficient cough. The lack of efficient cough favors the retention of mucopurulent inflammatory products thus completing a disastrous vicious circle.

The prevention of toxemia from absorption is of utmost importance. The attitude of neglecting adequate pulmonary drainage when marked wheezing, sybillant and sonorous rales, and wide-spread large moist rales are detectable may have serious consequences. The administration of opiates leads only to a protracted toxemia in such cases. The judicious use of carbon dioxide inhalations, on the other hand, is likely to induce adequate drainage from the lungs. This, in turn, not only obviates toxemia from absorption, but also may facilitate the closure of cavities, aid the approximation of ulcerated areas and promote the healing of lesions of the mucous membranes of the bronchi.

The seriousness of massive or patchy atelectasis resulting from obstruction of the air passages by inflammatory secretions lies not only in the symptoms induced by the development of atelectasis, but also in the potential predisposition of the atelectatic areas to the invasion of pathogenic microorganisms. Carbon dioxide inhalations should be given to patients who are prone to develop atelectasis. These include cases with auscultatory evidence of profuse formation of secretions that are not expectorated. In other instances the amount of bronchial secretions might be moderate, but their elimination is inadequate because the respiratory movements are restricted owing to thoracic pain, adhesions, or fear of hemorrhage. In cachectic patients the respirations may be incomplete and the intercostal muscles weakened so much that when the diaphragm descends during inspiration the lower thoracic wall is sucked in and thus the basal portions of the lungs remain underinflated or gradually arrive at a stage of atelectasis. A not infrequent camouflaged form of massive atelectasis is caused by bronchial spasm in the presence of retained secretions; it appears as a periodically recurring "spasmodic asthma."

The development of atelectasis results in a diminution of the respiratory surface and a

progressive anoxemia. Consequently, the respirations will increase automatically in an effort to supply the necessary oxygen. In this process carbon dioxide is washed out, causing a decreased alveolar carbon dioxide tension and a reduction of the alkali reserve. These changes lead to a deficiency of carbon dioxide in the blood and tissues.

Unproductive, severe cough disturbs the healing process, and its force may cause a spread of tuberculosis from one part of the lung to another, or from one lung to the other. It may favor the development of emphysema and spontaneous pneumothorax. It may cause a rupture of a pulmonary vessel and a consequent hemorrhage, also vomiting, loss of appetite, exhaustion, headache, insomnia, rise in temperature, dyspnea, cyanosis, thoracic pain, sub-conjunctival hemorrhage, or urinary incontinence. Unproductive cough is a trauma not only to the diseased lung, but to the entire body.

In carbon dioxide an ideal remedy is recommended for the treatment of cough. The apparatus used in my work consists of a tank that contains a mixture of 10 per cent carbon dioxide and 90 per cent oxygen, with an oxymeter which regulates the flow of gas per minute. A rubber tube connected to a glass tip, like that used for taking vital capacity, delivers the mixture to the patient. A rubber bag, which serves as a reservoir, is attached to the rubber tubing by means of a T-tube. The oxymeter is set for from 3 to 5 liters per minute, depending upon the individual reaction. The length of treatment should be from 15 to 30 minutes, and should be adapted to each patient. The treatments are repeated daily. In some instances when the elimination of the mucopurulent material is very difficult, two or three inhalations are given daily. There are cases in which the results by this simple procedure are not satisfactory. In such cases an ordinary mask, used for general anesthesia is substituted for the glass tube and inhalations are given from 5 to 15 minutes at a time. The treatments are continued until satisfactory results are observed. Particular attention must be paid to the amount of sputum that is expectorated after carbon dioxide inhalation. If it appears that it is less than expected, postural drainage should be instituted after each treatment. This combined procedure is indispensable in patients with general debility who are unable to carry through an effective cough.

The inhalations are followed, usually, by a noticeable increase in the depth of respiration. Immediate relief from a sensation of pressure and heaviness in the chest was observed in many instances. The alleviation of dyspnea is attributable to the elimination of bronchial obstruction partly by the liquefaction of tenacious, obliterating mucous collections. In patients with signs and symptoms of retention of mucopurulent material in the lungs, an unproductive cough can be changed into a productive one, and satisfactory pulmonary drainage established. Subsequent to inhalations the frequency and severity of cough are substantially reduced and the use of opiates for controlling it can be easily restricted or entirely eliminated. Full benefits of the treatment were noticeable in some of my patients only after the third or fourth day of the inhalations.

Complaints attributable to the inhalations occurred in few instances and were of minor significance. These were: weakness, slight shaky feeling, hot sensation, frontal headache, palpitation and slight dizziness.

Indications of carbon dioxide inhalations: 1. Excessive cough that is insufficient to induce good drainage. 2. Dyspnea originating from lobar or multiple lobular atelectasis. 3. Bronchiectasis secondary to pulmonary tuberculosis. 4. When a surgical paralysis of the phrenic nerve is followed by an ineffective cough, and by retention of inflammatory products that may cause toxemia and dyspnea. 5. Artificial pneumothorax, when the relaxation of the diseased lobe is accompanied by a massive atelectasis of the uninvolved lobe. 6. Aiding the reexpansion of the lung following its collapse in connection with the drainage of an empyema, or the reexpansion of the lung after long-continued artificial pneumothorax. 7. The prevention and treatment of massive atelectasis following thoracoplasty.

The contraindications are: 1. Hemorrhagic tendencies. 2. Marked emphysema. 3. Widespread pulmonary fibrosis without atelectasis and without mucopurulent retention in the air passages. 4. Acute plastic pleurisy, and pleural effusion. 5. Hypertension. 6. When

the cause of cough or dyspnea is outside of the lung. 7. Extreme debility.

Conclusions

1. In cases of pulmonary tuberculosis where numerous moist rales or the presence of widespread rhonchi are indicative of the formation and retention of mucopurulent inflammatory products an adequate drainage of the lung is imperative.

2. Accumulation and retention of viscid, tenacious secretions in the bronchial tract are likely to cause excessive cough and massive or patchy atelectasis.

3. The inhalation of a mixture of carbon dioxide and oxygen is conducive to a liquefaction of bronchial secretions and to their efficient removal by means of the increased respiratory motion of the lung, by the blanching of the bronchial mucous membranes, and by the increased peristalsis of the bronchial tubes.

4. The evacuation of the bronchial tract is likely to be followed by the opening up of previously atelectatic areas and consequently by the disappearance of dyspnea and cyanosis.

5. The inhalation of a mixture of 10 per cent carbon dioxide and 90 per cent oxygen is recommended as a safe and efficient method for the treatment of dyspnea and atelectasis, and for the management of cough in pulmonary tuberculosis.

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The Value of the Preventorium in the Health Campaign

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DURING the past 3 to 4 years there have been frequent expressions of opinion by well-known authorities to the effect that the preventorium has outlived its usefulness if, indeed, it ever had any; that the "preventorium idea" is based on sentiment and not on sense; and, finally, that it is high time facts were faced and that the money now being spent—and the word, "wasted," might well be substituted—be devoted to other purposes. Papers on this subject have been read by Dr. Moorman of Oklahoma, at the meeting of the National Association two years ago, and by Dr. Chester A. Stewart at the last meeting in Milwaukee while opinions to this effect have been openly expressed by other members of the Association, notably, Dr. A. J. Myers, and even more than hinted at by members of the National Tuberculosis Association staff. The reasons on which the opinion of these gentlemen is based appear to be somewhat as follows:

1) The preventorium type of child, namely, the infected contact case, appears to be not a danger to the community and therefore does not need to be institutionalized;

2) There is, in some communities at least, a lack of beds for children who are actively sick with tuberculosis and who are thus a menace to those about them and who are urgently in need of treatment;

3) The treatment that the child who is

* Deceased, July 20, 1938.

merely infected, but not clinically sick is in need of, and apparently in some minds this type of child is not in need of very much, if any, treatment, can be perfectly well carried out in the homes or in so-called "foster homes";

4) Finally, no tangible facts or figures have been brought forward to show that the preventorium has accomplished anything as far as saving the lives and promoting the health of these children is concerned.

I would state at the outset most emphatically that I am in distinct accord with the statement that the existence of a preventorium is not justified in any community where there are not sufficient beds for children who are sick with active communicable tuberculous disease. But as much as this unfortunate state of affairs holds true in Oklahoma and in Minnesota and in many other parts of this country, it does not hold true in many of the larger communities in the east. I certainly can speak for New England and feel that as far as the number of beds is concerned we have plenty in Massachusetts and very nearly all that are needed in the remaining five New England states to take care of all children who need institutional treatment and who without this would be a source of infection to others. I also feel quite properly, that the next step for us to take in order to reduce still further the ravages of this disease is to prevent the development of future cases of tuberculosis by taking care of these children as I believe they should be cared for, namely, in a preventorium and not to try to do this "in a half-baked way" in their homes.

Let us consider the statement that this can all be done just as well in the homes. I am frankly amazed at this. It might just as well be said that children could be taught reading, writing and arithmetic and given what is the equivalent of the primary grades of school in their homes instead of sending them to school for this purpose. For the preventorium is nothing more or less than a school where children are taught kindly, but firmly and intensively the rules of right living, physically, mentally and indeed spiritually.

There has been talk of so-called "foster homes" where these children can be taught and cared for. I do not believe that such a plan will ever prove successful in this country, certainly not in our larger cities, particularly when it has been stipulated by one authority that these "foster homes" should be comparatively near at hand and not at a distance in the country.

Exactly what is the situation in regard to the larger cities in the west and middle west regarding slum areas I do not know, but I can speak for New York, Philadelphia, Baltimore and Boston in only too certain terms on this subject. It is inconceivable for me to even imagine a "foster home" for children of the type that are accepted for our Prendergast Preventorium in the metropolitan Boston district that could in any way or shape give the care and training provided at our own institution. For after all, the work of the preventorium is primarily educational and not medical.

I quite agree with those who say that no voluntary health or tuberculosis association such as ours should spend its money in maintaining an institution unless it were for educational purposes. While it is true that our children are given the proper food, diet, medical attention, x-rays and tuberculin tests, I look upon all this as comparatively unimportant details. What is of infinitely greater value is education along all lines. Not only do these children go to school and continue their regular course which they would have had at the public schools in Boston that they had been attending, but they are taught many other things, such as home hygiene, cooking, carpentry, gardening, the knowledge of flowers, birds and trees, the setting of tables and waiting at meals and everything that goes under the general category of the "amenities of life." I have had many meals at our preventorium with forty to one hundred children and never in my life have I ever seen a better behaved and a quieter and more courteous and kindly group of young folks than I have seen there. And this does not end the story by any manner of means. Sundays throughout the year and particularly in the summertime, parents in large numbers come to visit the children so that there may be 150 or more of them gathered at the preventorium grounds. For many of them this is the only holiday and vacation that they have during the year and they look forward to it immensely. On these occasions a talk or

demonstration of some kind of a practical nature is given by some well-qualified person while in addition children put on an entertainment of their own, greatly appreciated by friends and relatives. Furthermore, the grounds are left clean and not cluttered with papers and litter while of greater import these Sunday meetings are not followed by upset stomachs on the part of the children on the following day.

When the child enters our preventorium, and it is explained to the parents that this is simply a temporary transfer from one home to another, the home is visited by one of our workers and these visits are continued for an indefinite period after the child has been discharged from the preventorium. By this means the child is not only kept under medical supervision, but it is seen to that the lessons learned at the institution in regard to fresh air, cleanliness, good food and rest are continued in the home and are taught to every member of the family.

Education along even broader lines is carried. Students from the three medical schools in this city come to Prendergast for demonstrations of the tuberculin reaction, x-ray and treatment of this type of case. Nurses from practically all the nursing schools connected with our large Boston hospitals, social service workers and groups of women in almost every walk of life have meetings at our preventorium throughout the year. Local medical societies more and more are including in their yearly program one meeting at our preventorium where doctors are given a practical demonstration of the diagnosis, treatment and training of the contact case.

At the present time our sphere of influence is not merely confined to Boston. Because we had a certain number of empty beds which our own finances did not permit us to fill, we are now taking "boarders," children from the towns and cities outside of Boston at no expense to us who otherwise would have no such treatment. Dr. Elliott Josiin of this city, an international authority on diabetes, was disturbed because he could find no place in this country where young diabetic boys could receive treatment and the course of training in proper food so necessary for their welfare, knowing that figures showed that these diabetic boys were thirteen times more liable to tuberculosis than normal children. We agreed to offer him a certain number of beds for these boys with the understanding that it would be at no extra expense to us. During the past year we have had over one hundred of such diabetic boys who otherwise could not have received adequate care.

It has been plainly stated by one of the critics of the preventorium that no facts or figures have been produced to show the preventorium is doing good and is doing anything more than could be done by medical and nursing supervision in the home or "foster home." A few years ago we looked up some 700 children who had attended our preventorium during the decade from 1922-1932. Some of the children in this group had thus been discharged ten years and some less than a year. Of this group of 700, I found that only one child had since died of tuberculosis and that only three of these contact cases had since come down with clinical tuberculous disease. We then investigated the exact condition of 700 children of the same age group, race, location as the others, each a contact case, with a positive tuberculin reaction, but who had *not* been able to attend our preventorium and who had remained at home under the care of the city tuberculosis nurses and physicians and in a few instances of their own private doctors. Dr. Cleaveland Floyd of this city, Director of the Tuberculosis Clinics, provided this list of children with the understanding that they were to be similar in every way as far as was possible to the first group. Of these children who had been handled during the same decade, 1922-1932, it was discovered that *ten* had since died of tuberculosis and that 40 had since come down with clinical tuberculous disease. Granted that figures are not always reliable, it certainly would appear from this that the striking balance as far as results are concerned in favor of those children who *had* been given preventorium training could not be and was not entirely due to chance. These figures which have been published and concerning which I spoke at the meeting of the National Tuberculosis Association at Saranac Lake three years ago have as yet to be refuted. They are striking evidence of the value of a well-run preventorium.

To summarize this moot subject I would

state:

1) That I believe the preventorium is justified only in those communities where there are ample bed facilities for clinically sick children.

2) That the preventorium is an educational institution of the very greatest importance and the widest scope, affecting not only the children themselves but the parents and other members of the family.

3) That as far as Boston and other large cities are concerned, "foster homes," no matter how excellent, cannot possibly provide the kindly care, skilled attention and detailed and personal after-care that can be offered by a well-run preventorium.

4) That the figures which I have here shown concerning our own Prendergast children show definitely and clearly what a well-run preventorium such as ours can do and that its existence is distinctly more than justified.

Tuberculous Enteritis*

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WE ARE called in consultation; the patient is male, aged 26; his skin, pale, almost waxy; marked emaciation, even to gauntness; mental depression with a dejected expression; and eyes sunken, surrounded by dark circles. All in all he presents a toxic appearance. Only a few moments are required to elicit a history of pulmonary tuberculosis of two and one-half years' duration, and gastro-intestinal symptoms for a period of six months, consisting of variable abdominal pain, nausea, vomiting, and diarrhea to the extent of six to ten soft, mushy and occasional liquid movements, greenish in color, with a rancid odor, containing both mucus and blood.

The picture you have just visualized is a history of far-advanced pulmonary tuberculosis with tuberculous enteritis. The prognosis is hopeless—beyond the scope of medical science. Treatment is of no avail. The only alternative is to alleviate suffering and to resort to opiates. This case was seen in 1926, as were many others of a similar nature. Fortunately, they are now becoming less frequent and, may we even say, of only rare occurrence.

We now more frequently see another picture. This time the patient is a female, aged 45, with a history of pulmonary tuberculosis for a period of four years. There is also a history of vague digestive symptoms for a period of some twenty years, but not of sufficient importance to suggest treatment until six weeks before examination. Symptoms appeared following an acute respiratory infection. The presenting symptoms were regurgitation and vomiting, occurring immediately to two hours after meals. The bowels were ordinarily constipated, but at the time of examination were normal. No pain or cramping was present, however nervousness was quite evident. She had been examined elsewhere one year previous and told that she did not have tuberculous intestinal involvement.

The examination showed a pulse rate of 110. There was slight tenderness over the right lower portion of the abdomen. The sigmoid was palpable as a firm contracted tube. The cecum was palpable as a firm, resistant, and tender mass. There was a midline scar from appendectomy. The stool was very offensive, yellow in color, and microscopic examination showed numerous starch granules. A clinical diagnosis of tuberculosis of the cecum was made and this was confirmed by x-ray examination.

The stomach showed moderate atony, ptosis, and emptied rather slowly, though it was completely empty at the end of six hours. The duodenal cap was normal as to motility, slightly enlarged. Six hours after taking the barium the terminal ileum was distended at the ileo-cecal valve. The cecum was not freely movable. Twenty-four hours

* Presented at the Twenty-ninth Annual Meeting of the Texas Tuberculosis Association, El Paso, Texas, April 16, 1938.

after taking the meal the entire colon was empty. Enema injection showed the haustral markings practically absent throughout the descending and left half of the transverse colon. The cecum, ascending, and right half of the transverse colon showed marked irritability and failed to retain the barium. The ileo-cecal valve was forced easily and the terminal ileum remained filled. This examination revealed definite evidence of inflammatory reaction of both the cecum, ascending, and right half of the transverse colon. Appropriate treatment was instituted.

Though it was considered by Doctor Homan, who was directing the pulmonary treatment, that the chest condition was satisfactory, she continued to have a temperature of 100 to 100.5, but this gradually became normal and she began to show a slow, but very steady increase in weight. Three months later her temperature was normal; her pulse was 92; and there was a gain in weight of seven pounds. Six months later she had gained twelve pounds and was free of symptoms, except for occasional, very slight, gas. There was no longer any abdominal tenderness.

She was kept under x-ray observation, which, repeated eighteen months after the original examination, showed the cecum and one-half of the ascending colon to have a fixed and rigid wall devoid of haustrations. However, there was no irritability or tenderness.

The outline of the cecum did not change on manipulation. The ileo-cecal valve was open, but did not show the irritability noted on the original examination. At that time she was entirely free of symptoms. There was no tenderness of the abdomen, she had gained a total of twenty pounds, her bowels were moving normally, and her general condition was excellent. Some six months later she returned to her home and continued to take part in her former activities, observing moderate precautions such as daily rest, and only reasonable dietary restrictions.

Unfortunately, six years later she developed pneumonia followed by empyema which resulted fatally. There did not seem to be any relation between the acute condition and her former tuberculous involvement.

Between these two cases we have many others showing multiple symptoms and likewise variable periods of onset of gastro-intestinal symptoms following the development of pulmonary pathology and other complications in particular tuberculous laryngitis.

Case no. 3. This is again a female, aged 26, and is typical of various symptoms and their progression as noted in this group. The patient was examined in July, 1931, and gave a history of tuberculosis since 1925 which, however, had become inactive. She had remained well until January, 1931 when, following an attack of flu at this time, she developed gastro-intestinal symptoms with the presenting symptom that of nausea. Gastro-intestinal symptoms most commonly are noted one to four years after the development of pulmonary pathology. The presenting symptom in this case of nausea is one of the four most common symptoms; the others are vomiting, pain, and diarrhea.

At the time of examination, she stated that nausea was present most of the time, especially on movement of the body and showed no relationship to meals. She had a desire to vomit, but did not actually do so. Gas was present at times and there was occasional rumbling, but no distention. Pain was usually present once daily and was not sharp. Occasional belching associated with regurgitation of sour material. Her bowels had been constipated for several years requiring cathartics. The movements were yellow in color and contained considerable mucus. Several foods seemed to disagree, in particular citrus fruits.

She was very nervous, high strung, irritable, and slept poorly. She seemed to be awakened by a rise in temperature in the early morning. Numbness of the feet was present. The abdomen showed moderate distention, was hyperresonant, and the sigmoid was palpable.

X-ray examination confirmed the clinical diagnosis of tuberculous involvement of the intestines and treatment was instituted. She was very toxic due to her chest condition and was taking pneumothorax, the response, however, being very poor. Her discomfort was aggravated by severe pleurisy.

The nausea was entirely relieved in two weeks as well as the other symptoms and, except for the pleurisy, she was feeling very much better. Laryngeal involvement which

had been present for four months became worse six weeks after my examination and the laryngologist cauterized the throat at this time. It was necessary to make a variation in her diet because of soreness of the throat.

In about three months she stated that her bowels were moving two or three times daily without cathartics and that the last movement was usually loose. This is always a symptom of extreme importance. Normal movements occurring after a history of marked constipation are always significant and suggest future development of diarrhea, which occurred in this case three months later.

Her digestion, however, had been markedly improved and she was able to increase her diet to a very generous extent. Except for occasional nausea, symptoms were no longer present. However, her general condition was failing and her temperature was varying between 99.6 and 103. Her throat was not responding satisfactorily and her chest condition was growing steadily worse.

After seven months diarrhea was present constantly and she was having three or four movements daily. She had developed pain over the entire abdomen with considerable rumbling and variable distention. Nausea was present frequently and she vomited not infrequently. The bowel movement continued to be a yellow color. The abdomen was now full and distended, with moderate degree of tenseness and tenderness over the lower portion. By this time her lung condition had become very much worse.

The future course was inevitable. In this case we have practically a complete summary of the ordinary gastro-intestinal symptoms encountered in far-advanced tuberculous enteritis. Again we see the dangers of reactivation of the pulmonary lesion and the poor prognosis when the picture is further complicated by laryngeal involvement.

It should be evident, at this time, that the symptoms of intestinal tuberculosis are not constant, in fact are highly variable, and that there is no one symptom or group of symptoms that in itself is indicative of this complication. The four symptoms, nausea, vomiting, pain, and diarrhea, in a case of known pulmonary involvement are always suspicious of intestinal involvement and this condition should be excluded regardless of the apparent severity or minor characteristics of these symptoms. Another important feature is the presence of temperature, even though of low grade, in a case in which it cannot be explained on the basis of pulmonary involvement. A sudden loss of weight or development of anemia not explainable by an increase in the pulmonary lesion should be a hint to intestinal investigation in spite of the absence of symptoms referable to this organ. In the majority of cases, the presence of intestinal involvement bespeaks cavity formation of the lungs, but this is not necessarily true, and vague abdominal symptoms in a patient with even minimal pulmonary involvement, whether it be active or healed, should suggest investigation for possible intestinal pathology.

Intestinal involvement is most frequently found in the order mentioned: the cecum, ileum, ascending colon, and transverse colon. Involvement of the ileo-cecal region, appendix, jejunum, rectum, sigmoid and duodenum, is of a lesser extent and the frequency varies in different series of cases.

Intestinal symptoms in a case of known tuberculosis must not be considered due necessarily to tuberculous complications, for other conditions may be present. After all, the findings as described on x-ray examination are those of ulceration, which may be non-tuberculous, as in the following case.

Case No. 4. Here we have a female, aged 32, who had a moderately advanced pulmonary condition with a history of nausea and severe diarrhea. X-ray examination showed marked ulceration of the cecum, ascending colon, right one-half of the transverse and, to a less extent, of the descending colon. The findings were out of proportion to what would be expected from tuberculous involvement. Stool examination revealed a high grade amoebic infestation. Treatment aimed at this condition gave immediate relief of intestinal symptoms.

Tuberculous intestinal involvement in childhood probably presents a near silent picture more often than in adults, as in *Case No. 5.* The age here was 9; the case being referred to me by the chest specialist who was taking care of the child's father.

He had not previously been examined. The

presenting symptoms were constipation and a blotchy appearance of the skin of the face and neck on exertion. Further questioning revealed occasional temperature of about 99.6. He occasionally vomited and had slight pain, and gas was present infrequently. When present, the pain appeared immediately after meals. There was slight tenderness over the right lower quadrant.

The lung examination showed suggestive evidence of adult pulmonary tuberculosis. Gastro-intestinal x-ray examination showed slight irritability of the cecum, and the chest consultant confirmed the presence of active pulmonary tuberculosis. Appropriate treatment resulted in complete cure.

Reliable statistics of post mortem examinations reveal that a percentage varying between 15 and 25 per cent, showed intestinal tuberculous involvement. These had not had any clinical symptoms during life.

Post mortem examinations further reveal completely healed and varying stages of healing of intestinal ulceration in cases coming to their death solely from tuberculous involvement.

To avoid an extra load for the tuberculous patient, it is essential that we accord the greatest importance to even the slightest of digestive symptoms, for severe intestinal complications can often be avoided by proper investigation in early stages. Again, it is possible to assist a patient in shortening his period of invalidism by attention to non-tuberculous conditions as shown in the next case.

Case No. 6. This was a female, age 26, with gastro-intestinal symptoms and tenderness over the right lower quadrant. Tuberculous involvement was excluded by the x-ray examination, but indications of appendicitis, which of course, could not be said to be non-tuberculous were present.

She was operated on by Dr. F. P. Miller, who removed a subacute appendix which the pathologist reported to be non-tuberculous. The digestive symptoms showed immediate improvement and disappeared within six weeks after operation. A very slow convalescence from the pulmonary involvement now became much more rapid and, probably in much quicker time than if operation had been deferred, the patient became free of pulmonary activity.

The diet in these cases need not be complicated. A smooth non-irritating diet, containing sufficient calories, but not overburdening a toxic patient with a too high caloric content, sufficient protein to meet the daily requirements, and a high vitamin content is indicated. If citrus fruits are poorly tolerated, vitamin C preparations are available. All vitamins, A and D and, in particular, vitamin B are valuable adjuncts. The use of heliotherapy and medication will depend on the patient as well as on the attending physician's personal evaluation of their benefit.

In conclusion: the successful treatment of intestinal tuberculosis depends primarily on early diagnosis, thorough treatment, and absolute cooperation with the chest consultant.

NOTICE OF MEETING

The American Public Health Association will hold its 67th Annual Meeting in Kansas City, Missouri, October 25 to 28.

The program comprises fifty morning and afternoon meetings arranged by the ten Sections of the Association which are: Health Officers, Laboratory, Vital Statistics, Public Health Engineering, Industrial Hygeine, Food and Nutrition, Child Hygeine, Public Health Education, Public Health Nursing, and Epidemiology.

More than 300 papers and committee reports will be presented during the four day meeting.

A few of the well-known names on the program are as follows: Dr. Haven Emerson, Surgeon-General Thomas Parran, Dr. Earle G. Brown, Colonel A. Parker Hitchens, Dr. Karl F. Meyer, Dr. William A. Sawyer, and Professor C. E. A. Winslow.

PNEUMOPERITONEUM* — An Adjunct to the Treatment of Pulmonary Tuberculosis

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PNEUMOPERITONEUM, as such, is not a novelty. Since 1902, it has been used frequently for diagnostic purposes and since about 1917 it has been utilized in the treatment of intestinal and peritoneal tuberculosis. It is a form of collapse therapy applicable in selected cases of pulmonary tuberculosis, lung abscess and extensive bronchiectasis. The present discussion, based on a review of the literature and a series of 19 cases now receiving pneumoperitoneum, will be confined to its uses in pulmonary tuberculosis.

Literature

In the first report on this subject, published in the *American Journal of the Medical Sciences* in 1931, Dr. Andrew S. Banyai[1] said:

"It is conceivable that the elevation of the diaphragm, attained by pneumoperitoneum treatment, may exert a favorable influence upon the healing of the pulmonary process by limiting the excursions of the diaphragm and by decreasing the intrapleural negative pressure, which, in turn, will increase the blood supply of the pulmonary tissue."

After several years experience with the method, Dr. Banyai stated:

"The two most important immediate results of artificial pneumoperitoneum are: (1) the drainage of inflammatory products from cavities and from the bronchial tract (increased expectoration without increased cough); and (2) a relative functional rest of the diseased lung."

He was of the opinion that these two factors with the accompanying passive congestion and lymph stasis subsequent to pulmonary relaxation contribute substantially to the elimination of the tuberculous process both by absorption and by fibrous tissue formation.

Not until 1934 does there occur any further mention of this subject in the literature. Then Dr. Banyai, in the *American Review of Tuberculosis,* advocated combining pneumoperitoneum with phrenic nerve block[2]. This combination remains the most effective manner in which this method of collapse can be used.

In 1937 a study of a series of cases so treated by Drs. H. C. Trimble and B. H. Wardrip appered in the *Transactions of the Thirty-third Annual Meeting of the National Tuberculosis Association*[3]. This new form of therapy is now being used by these men and Doctor Edward W. Hayes[4, 5, 6] in California; by Dr. Minas Joannides in Chicago; by Dr. Banyai[1] in Wauwatosa, Wisconsin; by Dr. William Devitt in Allenwood, Pa.; by Dr. Frank Walton Burge[7] in Philadelphia, Pa., and here in Atlanta.

Doctor E. W. Hayes[4] in 1924 reported the treatment of intestinal and peritoneal tuberculosis with intraperitoneal injections of oxygen and supplied an excellent bibliography of pneumoperitoneum to that date. In later reports[5, 6] he reported additional cases treated with oxyperitoneum.

Indications for Artificial Pneumoperitoneum

The indications for artificial pneumoperitoneum in the treatment of pulmonary tuberculosis are as follows:

"1. If artificial pneumothorax is indicated, but cannot be established. In unilateral cases better mechanical results can be obtained by the combination of this method with phrenic nerve block.

"2. Severe pulmonary hemorrhage that cannot be controlled by any other means.

"3. Following pregnancy in cases of pulmonary tuberculosis in which pneumothorax cannot be induced.

"4. If after pneumothorax has been discontinued the tuberculous process becomes reactivated, but pneumothorax cannot be reestablished.

"5. In addition to phrenic nerve block in which the elevation of the diaphragm is insufficient.

"6. In addition to mechanically satisfactory phrenic nerve block when the sputum remains

* Read before the Fulton County Medical Society, January 20, 1938.

persistently positive.

"7. If the tuberculous lesion is too extensive for a bilateral artificial pneumothorax.

"8. Bilateral pulmonary tuberculosis complicated by intestinal or peritoneal tuberculous lesions.

"9. Pulmonary tuberculosis complicated by basal bronchiectasis.

"10. Marked basal emphysema complicating pulmonary tuberculosis.

"11. In addition to artificial pneumothorax in which the relaxation of the basal portion of the pneumothorax lung is desirable, but cannot be accomplished by pneumothorax alone, because of adhesions.

"12. Allergic bronchial asthma complicating pulmonary tuberculosis."

From the foregoing it is apparent that this type of collapse therapy is especially adapted to those cases having extensive bilateral involvement or in which pneumoperitoneum is used to supplement some other method or methods of collapse. As yet this method does not compete with or supplant more orthodox means of inducing collapse—provided satisfactory results are thereby obtained.

Knowledge of Pneumothorax Therapy Helpful

Those who begin the use of pneumoperitoneum will find that previous experience with pneumothorax therapy is of great help. Otherwise the road to perfect technic and success is frought with many pitfalls for the conscientious physician. There are many red, yellow and green signals which cannot be adequately described on paper, but can be distinguished only by the educated touch of an experienced finger.

Necessary Equipment

The essential equipment for the administration of pneumoperitoneum is: A pneumothorax apparatus, 4 cc. of 2 per cent solution of "Novocaine," a 5 cc. syringe with one 24 gauge needle 1½ inches in length for the "Novocaine" infiltration, and a 19 gauge needle 1½ inches in length for introduction of air. The latter needle should have the bevelled point filed shorter to make it slightly blunt, thereby reducing the danger of visceral puncture.

Treatment

For the treatment, the patient is placed in one of two positions determined by the point of entrance. For the subphrenic introduction of air the patient is placed in the lateral position, as in pneumothorax, and for the upper and lower introduction of air the patient is placed in a semi-reclining position. In the latter position the points of entrance (upper and lower) are located at the left lateral border of the rectus muscle—either just under the costal margin, or three inches below the umbilicus. Neither of these points of entrance offers any advantage in any respect except that of choice to the operator.

After selection of the point of entry the skin is sterilized with iodine or alcohol and both skin and abdominal wall are infiltrated with about 4 cc. of "Novocaine" solution. No attempt is made to infiltrate the peritoneum. The larger needle is now introduced at a slight angle, thus avoiding direct pressure on the viscera, and the tube from the pneumothorax apparatus is attached. Unless there is an already well-established pneumoperitoneum, the manometer of the pneumothorax apparatus will not register when the needle is first introduced. Due to the lack of pressure fluctuation and the constant presence of positive pressure, the manometer is of very little value in this type of injection.

The manometer may reveal the positive pressure in the abdomen following the injection of 200 to 600 cc. of air. At the first, an injection of 200 cc. of air is usually given. Succeeding injections are increased by increments of 200 cc. until 800 to 1500 cc. are given.

As in pneumothorax therapy, the interval of injection depends upon the rate of absorption, a four-day interval being necessary for the first three to six injections. When the pneumoperitoneum has been well established, the interval may be increased to seven days.

It is the part of wisdom to explain all details of the procedure to the patient so that he may be in a receptive frame of mind, thereby avoiding reactions from fear or nervousness. During the flow of air into the abdomen the patient is questioned regarding any sensation of pain or pulling in the chest. Usually 100 to 200 cc. of air may be injected following

the start of discomfort. If the pain is acute, lowering the patient's head and placing a pillow under the hips will afford relief by allowing the air to accumulate in the pelvis.

Discussion of Effects and Results

There are few, if any, hazards attendant upon entering the abdominal cavity. It is an old procedure. The most serious accident is the formation of air emboli—and these are rare indeed. Fluid may occur infrequently, but is of little consequence. Obliteration of the peritoneal space may occur in a few instances, but the reports contain no mention of any discomfort. Clinically, pneumoperitoneum produces no ill-effects and, to date, no clinical evidence of intestinal obstruction or adhesions has been developed following cessation of treatment. This is so despite a report from Dr. Gertrude Moore, of Los Angeles[3], that at autopsy patients have shown a picture of intense chronic peritoneal inflammation. Reports of the examination of the peritoneum during life, as observed at operation, are lacking in the literature, and I have had no occasion to have any of the patients in my series operated on.

There are many favorable symptomatic results in successful pneumoperitoneum: Relief of insomnia, increase of appetite, decreased sputum, lessened cough and abdominal symptoms. The psychic effect upon the patient is remarkable, especially in advanced cases.

Unlike pneumothorax, the air is absorbed from the abdomen very quickly. As a result, patients must be watched closely so that refills may be sufficiently close together to keep the diaphragm continuously elevated. This can be done in sanatoria or private practice only where examinations can be made when necessary.

As in all new forms of therapy, a large number of cases must be studied, under all conditions, and followed for a number of years before positive statements can be made as to the merits and facts of the treatment. Statistical data do not yet permit a sufficient study of pneumoperitoneum, but its usefulness in selected cases has been proven, even in the short time it has been utilized. Its continued use with careful observation is strongly advocated.

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NOTICE OF MEETING

The Association of Military Surgeons of the United States has chosen the Mayo Foundation at Rochester, Minnesota as their meeting place during October 14, 15, and 16, 1938.

In addition to the regular members of the Association of Military Surgeons of the United States, the Association of Medico - Military Inactive Duty Training Unit will meet there at the same time. This unit is composed of several hundred medical officers, active and reserve, of the Army, Navy, Public Health Service, National Guard, and Veterans' Administration.

An interesting program has been arranged by the Committee and the trip to the Mayo Clinic should be well worthwhile.

The Report of the Sanatorium Committee of the *American College of Chest Physicians*[*]

DURING a period of six months, from August, 1937 to January, 1938 inclusive, questionnaires were mailed from the offices of the American College of Chest Physicians to private sanatoria in the United States. Four questions were asked. (Table I.). The interesting highlights of this report are:

1. That for a period of five months the number of beds occupied and vacant in the private sanatoria of this country remained almost stationary, but in January, 1938, the number of beds occupied rose to 87.8 per cent and the number of beds vacant decreased to 12.2 per cent. Also, the number of patients on the waiting lists increased in these institutions in January, 1938.

2. That the number of patients who paid full rates remained stationary during a period of five months and that in January, 1938 this also increased to 60.8 per cent as compared with a low of 53.3 per cent in October, 1937. In keeping with the general run of the report, the number of patients treated free also decreased in January, 1938, to 22.1 per cent from a high of 23.2 per cent in August and December, 1937.

3. That the number of patients who were receiving pneumothorax showed a decline in January, 1938, of almost 7 per cent from August, 1937. Those receiving thoracoplasty also showed a decline from a high of 3.1 per cent in November, 1937, to 1.5 per cent in January, 1938. Phrenics showed a low of 6.4 per cent in December, 1937, compared to a high of 9.4 per cent in January.

In comparing this report with the survey made last year by the Statistical Committee of the Federation of American Sanatoria, which was reported by Dr. E. W. Hayes, Chairman of this Committee at our meeting last year at Atlantic City; we found that 475 public sanatoria having a total number of 53,597 beds, with an average of 164 beds in each sanatorium reported, as compared with 56 private sanatoria reporting a total of 3,508 beds or an average of 63 beds in each sanatoria.

The average number of vacancies in public institutions was 12, compared with the average vacancies in private institutions of 15.

Public institutions reported an average of 29 patients on the waiting list, compared with an average of 2 in the private sanatoria.

Approximately 12 per cent of the beds in public institutions were vacant as reported in last year's survey as compared with 25 per cent of the beds vacant in private sanatoria as reported in this survey.

In a survey made in 1935 of available beds in private sanatoria, reported by Dr. E. W. Hayes in his paper published in *Diseases of the Chest,* October, 1937, the conclusions were: that out of 3,348 beds in the private sanatoria, 1,182, or a little over one-third of the total number were reported as vacant. The report this year shows that there are fewer vacant beds in private sanatoria during the period of this survey as compared with the survey made in 1935.

In the report of the Statistical Committee rendered at Atlantic City last year, figures showed that 29 per cent of the patients in public institutions were receiving pneumothorax, 11 per cent had received phrenic paralysis, and 4.38 per cent had received thorocoplasty. This present report shows that 29.4 per cent of the patients in private institutions were receiving pneumothorax, 7 per cent had received phrenic paralysis, and 2.7 per cent had received thorocoplasty.

Deductions

Pneumothorax in private and public institutions were on a par; phrenic paralysis showed 4 per cent more in the public institutions; and thorocoplasty 1.5 per cent more in public institutions.

The per diem cost in the private sanatoria, as reported by 38 institutions, showed a low of $1.00 and a high of $7.31, or an average of

[*] Read before the Fourth Annual Meeting of the American College of Chest Physicians; San Francisco, California, June 12, 1938.

$3.11. This is compared with the report on the public institutions showing a per diem cost of operating ranging from 70c low to $5.48 high, or an average of $2.36. These figures do not include the per diem costs in Federal Hospitals where the per diem costs are higher than those in other public institutions.

The report further shows that in the 56 private institutions, 57.9 per cent paid full rate, 20.8 per cent paid part rate, and 21.3 per cent were treated free of charge.

TABLE I.

Questionnaire Data

1. Accomodations:
   a. Number of beds available for tuberculous patients.
   b. Number of beds occupied.
   c. Number of beds vacant.
   d. Number of patients on waiting lists.
2. Rates:
   a. Number of patients paying full rate.
   b. Number of patients paying part rate.
   c. Number of patients treated free.
3. Collapse treatment:
   a. Number of patients receiving pneumothorax.
   b. Number of patients receiving thoracoplasty.
   c. Number of patients receiving phrenic.
4. Cost:

   Per diem cost per patient.

TABLE II.

August, 1937

	No.	Per Cent	Cost
Total Reported	27		
Total Beds	1518		
a) occupied	1180	77.7	
b) vacant	338	22.3	
Waiting List	46		
Full Rate Patients	587	54.7	
Part Rate Patients	238	22.1	
Free Patients	249	23.2	
Pneumothorax Patients	423	35.8	
Thoracoplasty Patients	32	2.7	
Phrenic Patients	106	8.9	
Total Reported Cost	15		
a) highest			$4.50
b) lowest			$1.33
c) average			$3.77

TABLE III.

September, 1937

	No.	Per Cent	Cost
Total Reported	56		
Total Beds	3508		
a) occupied	2704	77.1	
b) vacant	804	22.9	
Waiting List	109		
Full Rate Patients	1341	57.9	
Part Rate Patients	482	20.8	
Free Patients	493	21.3	
Pneumothorax Patients	796	29.4	
Thoracoplasty Patients	75	2.7	
Phrenic Patients	190	7	
Total Reported Cost	38		
a) highest			$7.31
b) lowest			$1.00
c) average			$3.11

TABLE IV.

October, 1937

	No.	Per Cent	Cost
Total Reported	50		
Total Beds	3194		
a) occupied	2405	75.3	
b) vacant	789	24.7	
Waiting List	221		
Full Rate Patients	1148	53.3	
Part Rate Patients	527	24.4	
Free Patients	482	22.3	
Pneumothorax Patients	923	38.3	
Thoracoplasty Patients	74	3	
Phrenic Patients	157	6.5	
Total Reported Cost	31		
a) highest			$7.26
b) lowest			$1.62
c) average			$3.15

TABLE V.

November, 1937

	No.	Per Cent	Cost
Total Reported	40		
Total Beds	2335		
a) occupied	1740	74.5	
b) vacant	595	25.5	
Waiting List	76		
Full Rate Patients	936	54.2	
Part Rate Patients	481	27.9	
Free Patients	309	17.9	
Pneumothorax Patients	538	30.9	
Thoracoplasty Patients	55	3.1	
Phrenic Patients	119	6.8	
Total Reported Cost	28		
a) highest			$6.37
b) lowest			$1.65
c) average			$3.19

TABLE VI.

December, 1937

	No.	Per Cent	Cost
Total Reported	37		
Total Beds	2662		
a) occupied	2094	78.7	
b) vacant	568	21.3	
Waiting List	61		
Full Rate Patients	1161	54	
Part Rate Patients	490	22.8	
Free Patients	499	23.2	
Pneumothorax Patients	740	35.3	
Thoracoplasty Patients	36	1.7	
Phrenic Patients	135	6.4	
Total Reported Cost	25		
a) highest			$5.62
b) lowest			$1.70
c) average			$3.15

TABLE VII.

January, 1938

	No.	Per Cent	Cost
Total Reported	28		
Total Beds	1955		
a) occupied	1718	87.8	
b) vacant	237	12.2	
Waiting List	158		
Full Rate Patients	864	60.8	
Part Rate Patients	243	17.1	
Free Patients	314	22.1	
Pneumothorax Patients	490	28.5	
Thoracoplasty Patients	26	1.5	
Phrenic Patients	163	9.4	
Total Reported Cost	18		
a) highest			$5.61
b) lowest			$1.30
c) average			$3.06

SANATORIUM COMMITTEE

Louis Mark, M.D., Columbus, Ohio, Chairman.

Benjamin A. Shephard, M.D., Oshtemo, Mich., Vice-Chairman.

Alexius M. Foster, M.D., Cragmor, Colorado;
Charles R. Gowen, M.D., Shreveport, La.;
Robert G. McCorkle, M.D., San Antonio, Tex.;
George T. Palmer, M.D., Springfield, Illinois;
Ralph B. Scheier, M.D., San Francisco, Calif.;
Frederick A. Slyfield, M.D., Seattle, Wash.;**
Everett E. Watson, M.D., Salem, Virginia.

**In the absence of Dr. Louis Mark, Columbus, Ohio; Chairman of the Sanatorium Committee; the report was read by Dr. Frederick A. Slyfield, Seattle, Washington; member of the Sanatorium Committee.

POSITION AVAILABLE

Positions are available for single resident physicians in tuberculosis sanatoria. Must be graduates of accredited medical schools and have had some training in tuberculosis. Please mail full particulars to DISEASES OF THE CHEST, P. O. Box 1069, El Paso, Texas.

An Appetite and Weight-Building Tonic in Chronic Pulmonary Tuberculosis*

A Study of Ninety-Eight Cases

HENRY W. LEETCH, M.D., and JOHN N. HAYES, M.D., F.A.C.P.

SARANAC LAKE, NEW YORK

IN ANY chronic infection such as pulmonary tuberculosis, stimulation of appetite sooner or later becomes an important factor in the treatment, so much so that the phthisiotherapeutist is always on the alert for agents to accomplish this. Anything that will break the familiar circle of toxemia, loss of appetite, and loss of weight is of tremendous value in turning the tide in favor of the tuberculous individual.

Following the report of Ornstein and Epstein[1] on the use of a new vegetable compound in 301 cases of pulmonary tuberculosis, the authors became interested in this preparation and tried it on ninety-eight patients in the Endicott-Johnson Sanatorium in Saranac Lake, Gabriels Sanatorium, and on private patients.

The vegetable compound** is an alcoholic extract of garlic, cypress, eucalyptus, creosote, and menthol and is administered on a small piece of bread which is held in the mouth a few moments while the fumes are inhaled and then the bread is swallowed. Three drops twenty minutes before meals are given the first day, and the daily dose increased by one drop until thirty drops three times a day are given. This dosage is continued for as long as seems desirable. None of our patients took the treatment for less than six weeks, and

TABLE I

Moderately Advanced (33 patients)

	No.	%
Gained weight	17	54.8
Lost weight	6	19.4
Stationary	8	25.8
Discontinued from upset stomach	2	
Average gain in weight	12.9 lbs.	
Average loss in weight	6.9 lbs.	

Far Advanced (65 patients)

Gained weight	25	41
Lost weight	19	31
Stationary	17	28
Discontinued from upset stomach	4	
Average gain in weight	8.3 lbs.	
Average loss in weight	6.4 lbs.	

These cases were then analyzed as shown in Table II.

TABLE II

Moderately Advanced (31 patients)

	No.	%
I. Gained weight	17	
(a) Continued to gain		4
(b) Previously lost and then gained		0
(c) No previous weight record		3
(d) Stationary and then gained		10
II. Lost weight	6	
(a) Gained before treatment and then lost		1
(b) Continued to lose		1
(c) Stationary and then lost		4
(d) No previous record		0
III. Stationary in weight	8	
(a) Gained before and then stationary		1
(b) Lost before and then stationary		0
(c) Remained stationary		7

Far Advanced (61 patients)

I. Gained weight	25	
(a) Continued to gain		6
(b) Previously lost and then gained		6
(c) No previous weight record		2
(d) Stationary and then gained		11
II. Lost Weight	19	
(a) Gained before treatment and then lost		1
(b) Continued to lose		13
(c) Stationary and then lost		5
(d) No previous record		0
III. Stationary in weight	17	
(a) Gained before and then stationary		0
(b) Lost before and then stationary		1
(c) Remained stationary		16

* Reprinted from New York State Journal of Medicine, August, 1938, Volume XXXVIII, Number 15.

**We are indebted to the Salus Lab., Inc. of New York, for keeping us supplied with this material known as Gamacor, which made it possible for us to conduct this investigation.

TABLE III

Monthly Medlar Index Computed

		Gained	Lost	Stationary
Moderately Advanced (16 patients)				
Index above 25 (definitely toxic) who remained above 25	4	1	2	1
Index above 25 who fell below 25	1	1	0	0
Index below 25 who remained below 25	10	7	3	0
Index below 25 who rose above 25	1	0	1	0
Far Advanced (8 patients)				
Index above 25 who remained above 25	5	1	3	1
Index above 25 who fell below 25	3	2	1	0

TABLE IV

Erythrocyte Counts

Improved count	15 or 79%
Average gain	1,000,000
Stationary	4 or 21%

most for from two to six months. A few patients objected to the rather strong odor and taste, or were upset by it. In these cases, administration in water instead of on bread or sugar overcame the objection.

We first tried the preparation on a few patients and the results were so striking that we gave the treatment to as many as would accept it.

The results on all of our cases, divided into moderately advanced and far advanced, are shown in Table I-II.

Some of the gains and some of the losses cannot be wholly attributed to the good effect or lack of benefit of the treatment. For example, one patient who lost weight under this treatment lost three members of his family and as a consequence sustained a severe upset. Ten cases who lost weight were terminal cases. A patient who gained thirty pounds was given the preparation at the beginning of the cure, with no previous record.

Attention should be drawn to the twenty-seven of the ninety-one patients who were either losing weight or stationary and who gained,

It will be seen that a larger percentage of the moderately advanced patients gained weight than did the far advanced cases. This, of course, is to be expected. On all these patients the routine treatment for pulmonary tuberculosis was continued. Where surgical intervention was indicated, it was used.

Thirteen patients had improved appetite without a gain in weight. Of these the weight remained stationary in seven and was reduced in six.

On twenty-four patients leukocyte counts were done every month and the results tabulated according to the Medlar index. (Table III).

From this it will be seen that the weight curve rather closely follows the blood picture as charted by the Medlar evaluation. It is not suggested that the administration of this compound had any influence on the toxemia of these patients as reflected in the blood stream.

It is of interest to note that in those patients with a low Medlar index the percentage of weight gain was greatest. This, of course, is to be expected. It is also interesting to see the gain in weight in even a small percentage of those patients whose blood picture remained bad throughout the treatment.

In a total of nineteen patients total erythrocytic counts were done before the treatment was started and at monthly intervals thereafter. (Table IV).

Summary

This compound (alcoholic extracts of garlic, cypress, eucalyptus, creosote, and menthol) is of definite value as a tonic in improving appetite and blood count and building-up weight in patients with chronic pulmonary tuberculosis. We do not believe that it has a direct effect on healing the disease but it is a valuable adjuvant in the treatment.

Reference

1 Ornstein, Geo. G. and Epstein, Israel G.: *Quar. Bull. Seaview Hosp. (New York City)*, 1:386, 1936.

Organization News

BOARD OF REGENTS

There are fourteen Regional Districts of the American College of Chest Physicians in the United States. Members of the Board of Regents and the districts which they represent are listed below:

District No. 1, Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont.
*Dr. John B. Hawes, 2nd, Boston, Massachusetts — 1941.

District No. 2, New York State.
Dr. John N. Hayes, Saranac Lake, New York — 1940.

District No. 3, Delaware, District of Columbia, Maryland, New Jersey, and Pennsylvania.
Dr. Frank Walton Burge, Philadelphia, Pennsylvania, *Chairman* — 1942.

District No. 4, Florida, Georgia, North Carolina, South Carolina, and Virginia.
Dr. Paul H. Ringer, Asheville, North Carolina — 1941.

District No. 5, Michigan, Ohio, Tennessee, and West Virginia.
Dr. Edward J. O'Brien, Detroit, Michigan — 1940.

District No. 6, Illinois, Indiana, and Iowa.
Dr. Robinson Bosworth, East St. Louis, Illinois — 1939.

District No. 7, Arkansas, Missouri, and Oklahoma.
Dr. L. J. Moorman, Oklahoma City, Oklahoma — 1941.

District No. 8, Alabama, Kentucky, Louisiana, and Mississippi.
Dr. Chas. R. Gowen, Shreveport, Louisiana — 1939.

District No. 9, Minnesota, North Dakota, South Dakota, and Wisconsin.
Dr. Jay Arthur Myers, Minneapolis, Minnesota — 1940.

District No. 10, Colorado, Kansas, Nebraska, Utah, and Wyoming.
Dr. McLeod M. George, Denver, Colorado — 1939.

District No. 11, Texas.
Dr. H. Frank Carman, Dallas, Texas — 1939.

District No. 12, Arizona, New Mexico, and Nevada.
Dr. Victor S. Randolph, Phoenix, Arizona — 1941.

District No. 13, California.
Dr. E. W. Hayes, Monrovia, California—1941.

District No. 14, Idaho, Montana, Oregon, and Washington.
Dr. G. C. Bellinger, Salem, Oregon — 1940.

*Deceased.

Dr. Nagla M. LafLoofy, Brooklyn, New York, a Fellow of the American College of Chest Physicians; presented a paper before the Brooklyn Thoracic Society at its meeting on May 20th entitled, "Case Finding through Periodic Contact Examinations."

Dr. Jay Arthur Myers, Minneapolis, Minnesota, a Fellow of the American College of Chest Physicians; is the Chairman of the Board of Editors of the Journal Lancet, the official monthly publication of the Minnesota, North Dakota, South Dakota, and Montana State Medical Societies. Many timely and splendid articles on chest diseases appear frequently in the Journal Lancet.

Dr. F. L. Loveland, Topeka, Kansas, a Governor of the American College of Chest Physicians; was elected First Vice-President of the Kansas State Medical Society and he is also serving as the Chairman of the Committee on Economics of the State Medical Society.

Dr. Jesse Carl Painter, Dubuque, Iowa; and Dr. Joseph W. Post, Philadelphia, Pennsylvania; Fellows of the American College of Chest Physicians, were elected to Fellowship in the American College of Physicians.

Dr. Robert B. Homan, Jr., El Paso, Texas; Secretary-Treasurer of the American College of Chest Physicians, addressed the Grant County Medical Society at Silver City, New Mexico. Dr. Homan spoke on Chest Surgery.

Dr. Leo W. Bortree, Colorado Springs, Colorado; President-Elect of the Colorado Medical Society and a Fellow of the American College of Chest Physicians, addressed the meeting of the Northeast Medical Society, Sterling, Colorado.

Dr. John H. Skavlem, Cincinnati, Ohio; a Fellow of the American College of Chest Physicians, was elected Trustee of the Cincinnati Academy of Medicine. On Monday evening, June 13th, Dr. Skavlem presented a paper before the Hempstead Academy of Medicine at the Portsmouth General Hospital. The title of the paper was "Tuberculous and Non-Tuberculous Chronic Lung Infections."

Dr. David W. Heusinkveld, Cincinnati, Ohio; a Fellow of the American College of Chest Physicians, was appointed a member of the Committee on Public Relations of the Academy of Medicine of Cincinnati.

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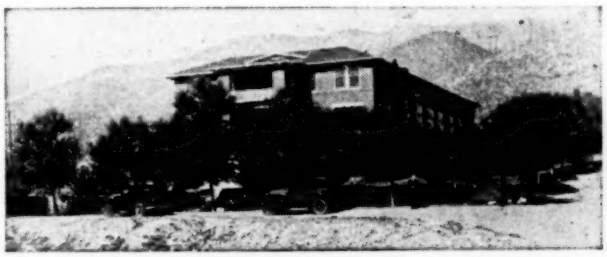

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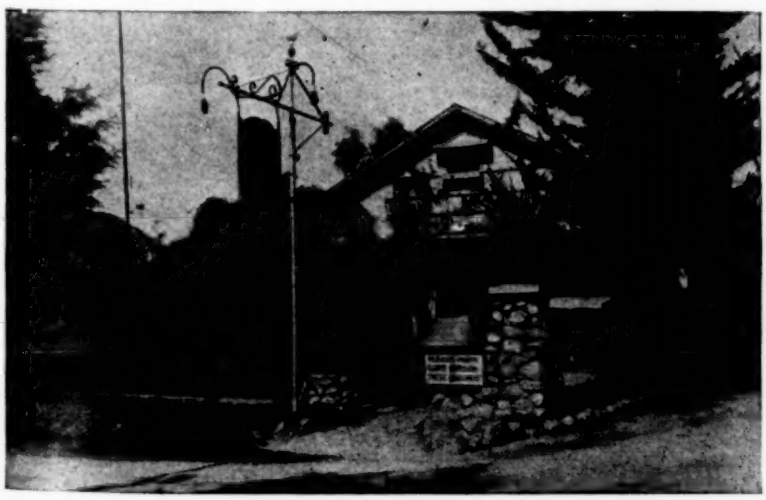

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C. E. ATKINSON, M.D.
MEDICAL DIRECTOR

Dr. Robinson Bosworth, East St. Louis, Illinois; a Regent of the American College of Chest Physicians, has received a joint invitation from the Michigan State Medical Society and the Michigan Tuberculosis Association to give a series of five lectures on tuberculosis to medical societies in five Michigan cities during the month of September.

Dr. Chas. H. Cocke, Dr. Paul H. Ringer, Dr. Martin L. Stevens, and Dr. Karl Schaffle, Asheville, North Carolina; Fellows of the American College of Chest Physicians, were members of a committee which arranged the second annual Tuberculosis Seminar held at Asheville in July of this year. Dr. Karl Schaffle, Governor of the American College of Chest Physicians for the State of North Carolina, was the chairman of the committee.

Dr. J. K. Shumate, Bayfield, Wisconsin; a Fellow of the American College of Chest Physicians, was elected President of the Ashland-Bayfield-Iron County Medical Society.

Dr. Chas. P. Cake, Washington, D. C.; a Fellow of the American College of Chest Physicians, has been appointed chief medical officer in tuberculosis, effective July 1st, of the Gallinger Hospital at Washington, D. C.

Dr. Albert J. Roberts, Ottawa, Illinois; a Fellow of the American College of Chest Physicians, has resigned as medical director of the La Salle County Tuberculosis Sanatorium, a position he has held since the sanatorium was founded in 1919.

Dr. Louis H. Clerf, Philadelphia, Pennsylvania; a Fellow of the American College of Chest Physicians, addressed the Eleventh District Councilor Medical Society at Washington, D. C. The subject of his talk was "Bronchoscopy and Pulmonary Infections."

Dr. W. S. Rude, Ridgetop, Tennessee; a Governor of the American College of Chest Physicians, was elected Vice-President for the Middle Tennessee District of the Tennessee State Medical Association and he was appointed Chairman of the State Committee on Tuberculosis.

Dr. Louis M. Limbaugh, Jacksonville, Florida; a Fellow of the American College of Chest Physicians, was elected as a member of the Executive Council of the Florida State Medical Association for a term of three years.

Dr. James L. Hamilton, Cattanooga, Tennessee; a Fellow of the American College of Chest Physicians, was named a member of the State Committee on Tuberculosis.

Dr. Harry Golembe, Liberty, New York; a Fellow of the American College of Chest Physicians, was elected President of the Sullivan County Medical Society.

Dr. Hugh M. Kinghorn, Saranac Lake, New York; a Fellow of the American College of Chest Physicians, delivered a paper before the 132nd annual meeting of the Medical Society of the State of New York. The title of his paper was "Vacination Against Tuberculosis."

A committee representing the North Carolina State Medical Association and the North Carolina Tuberculosis Association have been appointed to study plans to raise funds for a suitable memorial to the late Dr. Louis B. McBrayer, Southern Pines, North Carolina. Dr. McBrayer was the Executive Secretary of the North Carolina Tuberculosis Association for many years and active in developing the tuberculosis program of the State of North Carolina. Dr. George G. Dixon, Ayden, North Carolina, is representing the State Medical Society on the Committee and Dr. William H. Smith, Goldsboro, North Carolina, is representing the North Carolina State Tuberculosis Association.

Texas Tuberculosis Committee:

The President of the Texas State Medical Association announces the following physicians who will serve as members of the Tuberculosis Committee of the State Medical Society: Dr. R. B. Homan, Sr., El Paso, Chairman; Dr. W. D. Anderson, San Angelo; Dr. C. B. Carter, Dallas; Dr. Sim Hulsey, Ft. Worth; Dr. A. A. Ledbetter, Houston; and Dr. J. B. White, Amarillo. Drs. Homan, Anderson, Hulsey, and White are Fellows of the American College of Chest Physicians.

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